

**Notice of Allowability**

Application No.

10/726,269

Examiner

ERNEST UNELUS

Applicant(s)

BASAVIAH ET AL.

Art Unit

2181

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/03/10.
2. ☒ The allowed claim(s) is/are 1-3, 6-20, and 24-31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 11/12/10
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

/Chun-Kuan Lee/  
Primary Examiner, Art Unit 2181

**DETAILED ACTION****I. EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Jeffrey K. Weaver (Reg. No. 31,314) on August 3, 2010. The examiner proposed amendments to better place the application in condition for allowance, particularly adding the limitation that prior arts fail to teach. Mr. Weaver agreed. The application has been amended as follows:

3. **Claim 1** (Currently Amended) A switch comprising:

a port configured to receive a write command frame, the frame having a header comprising an originator exchange identifier (OX\_ID) field and a receiver exchange identifier (RX\_ID) field, as well as a Host identifier field and a target identifier field, wherein the Host and the target identifier fields identify Host and target devices, and wherein the OX\_ID ~~OX\_ID~~ and the RX\_ID ~~RX\_ID~~ exchange identifier fields enable the Host and the target to keep track of various transactions between each other;

a trapping mechanism configured to trap the write command frame; and

a processor configured to process the trapped write command frame by modifying the OX\_ID field of the write command frame header to include a new value of an OX\_ID exchange identifier before sending the write command frame to the target;

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wherein the processor is further configured to generate a transfer ready command frame, initialize a receiver exchange identifier (RX\_ID) of the transfer ready command frame by assigning a value to the RX\_ID field, the assigned RX\_ID corresponding to a write command session,

send the transfer ready command frame to the initiating Host before receiving a transfer ready command frame from the target;

receive a command frame with the assigned RX\_ID value; and

use the RX\_ID value as a handle for accessing information pertaining to the write command session in a sessions table, the sessions table storing information about one or more sessions or exchanges.

4. **Claim 2** (Previously Presented) The switch of claim 1, wherein the switch is an initiating Switch coupled to the Host in a first SAN.

5. **Claim 3** (Previously Presented) The switch of claim 2, wherein the processor of the initiating Switch is further configured to modify the write command frame before forwarding the write command to the target.

6. **Claims 4-5** (Cancelled)

7. **Claim 6** (Previously Presented) The switch of claim 2, wherein the processor of the initiating Switch is further configured to issue a Transfer Ready command to the Host.

8. **Claim 7** (Previously Presented) The switch of claim 1, wherein the switch is further configured to use the assigned RX-ID value as the RX\_ID for all communication related to the write command between the switch and the Host.

9. **Claim 8** (Currently Amended) The switch of claim 1, wherein the switch is further configured to use the new OX\_ID value as the OX\_ID in all communications between the switch apparatus and the target.

10. **Claim 9** (Previously Presented) The switch of claim 2, wherein the initiating Switch is further configured to transfer additional data frames to the target when the initiating Switch receives a Transfer Ready command associated with the write command frame from the target.

11. **Claim 10** (Currently Amended) The switch of claim 30, wherein the switch ~~Switch~~ is a target Switch coupled to the target.

12. **Claim 11** (Previously Presented) The switch of claim 10, wherein the target Switch forwards the write command frame to the target.

13. **Claim 12** (Previously Presented) The switch of claim 11, wherein the target Switch forwards data frames associated with the write command frame to the target after receiving a Transfer Ready command from the target.

14. **Claim 13** (Previously Presented) The switch of claim 12, wherein the target Switch is further configured to buffer the data frames prior to receipt of the Transfer Ready command.

15. **Claim 14** (Currently Amended) The switch of claim 12, wherein the target Switch is further configured to maintain a sessions ID table and to use the OX\_ID value of the write command frame as an index to the session corresponding to the write command.

16. **Claim 15** (Previously Presented) The switch of claim 10, wherein the target Switch is further configured to modify the RX\_ID value for all communication related to the write command frame between the target Switch and the Host.

17. **Claim 16** (Currently Amended) The switch of claim 14 [[5]], wherein the target Switch is further configured to modify the OX\_ID value in communications between the target Switch and the target.

18. **Claim 17** (Currently Amended) The switch of claim 1, wherein the switch is further configured to use the RX\_ID value of trapped write commands to specify the amount of buffer space needed for the write command and use the write command frame to request the needed buffer space.

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19. **Claim 18** (Currently Amended) The switch of claim 17, wherein the switch is further configured to use the RX\_ID value of trapped write commands to specify the amount of buffer space larger than needed for the write command and use the additional buffer space for subsequent write commands so that the switch apparatus need not wait for a Transfer Ready command to transfer data related to the subsequent write command.

20. **Claim 19** (Previously Presented) The switch of claim 1, wherein the switch is further configured to, in the event the switch does not have sufficient buffer space for the write command, to either: (i) generate a busy status signal to the initiating Host; (ii) place the write command

21. **Claim 20** (Previously Presented) The switch of claim 1, further comprising: a first SAN including

22. **Claims 21-23** (Cancelled)

23. **Claim 24** (Currently Amended) A method comprising:

receiving a write command at a switch, the write command specifying a host identifier corresponding to a host device and a target identifier corresponding to a target device, the write command also including an originator exchange identifier (OX\_ID) field with an assigned value and an uninitialized receiver exchange identifier (RX\_ID) field with a default value, wherein the OX\_ID~~OX-ID~~ and the RX\_ID~~RX-ID~~ fields enable the host and the target to keep track of various transactions between each other;

generating a transfer ready command at the switch;

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initializing a receiver exchange identifier (RX\_ID) of the transfer ready command by assigning a value to the RX\_ID field, the assigned RX\_ID value corresponding to a write command session;

sending a transfer ready command including the initialized RX\_ID to the host prior to receiving a transfer ready command from the target, wherein sending the transfer ready command to the host allows the switch to operate as a proxy for the target;

modifying the originator exchange identifier (OX\_ID) of the write command to generate a modified write command;

forwarding the modified write command to the target;

receiving a command with the assigned RX\_ID value; and

using the RX\_ID value as a handle for accessing information pertaining to the write command session in a sessions table, the sessions table storing information about one or more sessions or exchanges.

24. **Claim 25** (Previously Presented) The method of claim 24, further comprising configuring the switch to forward data frames associated with the write command received in response to the transfer ready command to the target.

25. **Claim 26** (Previously Presented) The method of claim 25, wherein a second switch between the switch and the target receives data frames associated with the write command and buffers the data frames until a transfer ready command is received from the target.

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26. **Claim 27** (Currently Amended) An apparatus comprising:

means for receiving a write command at a switch, the write command specifying a host identifier corresponding to a host device and a target identifier corresponding to a target device, the write command also including an originator exchange identifier (OX\_ID) field with an assigned value and an uninitialized receiver exchange identifier (RX\_ID) field with a default value, wherein the OX\_ID~~OX\_ID~~ and the RX\_ID~~RX\_ID~~ exchange identifier fields enable the host and the target to keep track of various transactions between each other;

means for generating a transfer ready command;

means for initializing a RX\_ID~~receiver exchange identifier (RX\_ID)~~ of the transfer ready command by assigning a value to the RX\_ID field, the assigned RX\_ID value corresponding to a write command session;

means for sending a transfer ready command including the initialized RX\_ID to the host prior to receiving a transfer ready command from the target, wherein sending the transfer ready command to the host allows the switch to operate as a proxy for the target;

means for modifying the OX\_ID~~originator exchange identifier (OX\_ID)~~ field of the write command to generate a modified write command;

means for forwarding the modified write command to the target;

means for receiving a command with the assigned RX\_ID value; and

means for using the RX\_ID value as a handle for accessing information pertaining to the write command session in a sessions table, the sessions table storing information about one or more sessions or exchanges.



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27. **Claim 28** (Previously Presented) The switch as recited in claim 1, wherein the switch is further configured to determine from the write command an amount of data to be written to the target, to ascertain whether it has sufficient storage space to buffer the amount of data, and to send the generated transfer ready command frame to the initiating Host before receiving a transfer ready command from the target if the switch has determined that it has sufficient storage space to buffer the amount of data.

28. **Claim 29** (Currently Amended) A method comprising:

receiving a write command at a switch, the write command specifying a host identifier corresponding to a host device and a target identifier corresponding to a target device, the write command also including an originator exchange identifier (OX\_ID) field and a receiver exchange identifier (RX\_ID) field, wherein the OX\_ID~~OX-ID~~ and the RX\_ID~~RX-ID~~ exchange identifier fields enable the host and the target to keep track of various transactions between each other;

assigning a new value to the OX\_ID ~~OX-ID~~ field in the write command;

forwarding the write command to the target;

receiving a transfer ready command from the target;

sending the transfer ready command to the host;

receiving a command with the assigned OX\_ID value; and

using the OX\_ID value as a handle for accessing information pertaining to the write command session in a sessions table, the sessions table storing information about one or more sessions or exchanges.

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29. **Claim 30** (Currently Amended) A switch ~~An apparatus~~ comprising:

an interface;

a processor; and

a memory, at least one of the interface, the processor or the memory being for:

receiving a write command, the write command specifying a host identifier

corresponding to a host device and a target identifier corresponding to a target device, the

write command also including an originator exchange identifier (OX\_ID) field and a

receiver exchange identifier (RX\_ID) field, wherein the OX\_ID ~~OX-ID~~ and the

RX\_ID ~~RX-ID~~ exchange identifier fields enable the host and the target to keep track of

various transactions between each other;

assigning a new value to the OX-ID field in the write command;

forwarding the write command to the target;

receiving a transfer ready command from the target;

sending the transfer ready command to the host;

receiving a command with the assigned OX\_ID value; and

using the OX\_ID value as a handle for accessing information pertaining to the write command session in a sessions table, the sessions table storing information about one or more sessions or exchanges.

30. **Claim 31** (Previously Presented) The switch as recited in claim 1, wherein the trapping mechanism is configured to trap the write command frame if the write command frame designates a predetermined Host\_ID and a predetermined target\_ID.

**The applicant has canceled claims 4-5 and 21-23.**

## **II. ALLOWABLE SUBJECT MATTER**

The following is an examiner's statement of reasons for allowance: In regards to claims 1, 24, and 27, the prior art of record fails to disclose, "receive a command frame with the assigned RX\_ID value; and use the RX\_ID value as a handle for accessing information pertaining to the write command session in a sessions table, the sessions table storing information about one or more sessions or exchanges".

In regards to claims 29, and 30, the prior art of record fails to disclose, "receiving a command with the assigned OX\_ID value; and using the OX\_ID value as a handle for accessing information pertaining to the write command session in a sessions table, the sessions table storing information about one or more sessions or exchanges"

The remaining claims 2-3, 6-20, 25-26, 28, and 31 are allowed by virtue of their dependencies on the independent claims. Hence, the examiner has allowed claims 1-3, 6-20, and 24-31.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

## **III. CLOSING COMMENTS**

**Conclusion**

**a. STATUS OF CLAIMS IN THE APPLICATION**

The following is a summary of the treatment and status of all claims in the application as recommended by M.P.E.P. 707.07(i):

**a(1) CLAIMS ALLOWED IN THE APPLICATION**

Per the instant office action, claims 1-3, 6-20, and 24-31 have been allowed.

**b. DIRECTION OF FUTURE CORRESPONDENCES**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest Unelus whose telephone number is (571) 272-8596. The examiner can normally be reached on Monday to Friday 9:00 AM to 5:00 PM.

**IMPORTANT NOTE**

If attempts to reach the above noted Examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Alford Kindred, can be reached at the following telephone number: Area Code (571) 272-4037.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the

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Electronic Business Center (EBC) at 866-217- 91 97 (toll-free).

November 17, 2010

/E. U./

Examiner, Art Unit 2181

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